

A RECONSIDERATION OF THE GENUS *BAKERIELLA*
(HYMENOPTERA: BETHYLIDAE)

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Abstract.—The concept of the neotropical genus *Bakeriella* is broadened to include several species formerly included in *Epyris*. Three species are described as new: *erythrogaster* (Costa Rica), *quadriceps* (Colombia), and *grandis* (Costa Rica). Females of *polita* Evans and *inconspicua* Evans are described for the first time. Range extensions for several other species are given. The 18 known species collectively range from Florida and Central Mexico to Brazil and Argentina.

Introduction

The genus *Bakeriella* was described in 1910 by Kieffer to include two South American bethylids related to *Epyris* but having pronotal carinae laterally, medially, and anteriorly. In 1964 I pointed out that there are similar species having the lateral and median carinae evanescent or even absent, and I redefined the genus to include these species. In my revision of *Epyris* (1969) I pointed out the close resemblance of members of the *montivagus* group of that genus to the species of *Bakeriella*. In fact, I suggested that the *montivagus* group might more properly be shifted to *Bakeriella* despite the lack of even the anterior pronotal carina in that group. Study of further material has convinced me that this step is inevitable, and furthermore that *Bakeriella* has evolved from a *Rhabdepyris*-like stock quite independently of *Epyris*. One species, described below as *erythrogaster*, in fact lacks a dividing septum in the scutellar groove, and thus will key to *Rhabdepyris* in most keys, although in all other features it is a true *Bakeriella*.

I believe that *Bakeriella* so redefined is a natural group, now known to contain 18 species collectively ranging from Florida and central Mexico to Brazil and Argentina. I present here a brief diagnosis of the genus as now conceived, a key to species, and remarks on each of the species, including a description of three new species and of the first known females of two others.

Generic features.—Epyrini fully winged in both sexes and with venation similar to that of *Epyris*. Antennal scrobes of female not carinate, but males

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with a delicate carina crossing above the antennal insertions and extending nearly to the lower eye margins; male antennae with dense erect or suberect setulae, third segment at least nearly as long as second. Eyes of female sparsely hairy, those of male barely or not at all hairy. Pronotum with a punctate groove paralleling the posterior margin, the disc prominent anterolaterally and often with a transverse carina connecting the anterior angles; sides of pronotal disc usually abrupt, often subcarinate or carinate; midline also sometimes carinate. Notauli strong on posterior half of mesoscutum; scutellum with a transverse basal groove which is usually divided by a thin septum, but sometimes undivided or divided by a flat-topped ridge. Propodeal disc elongate, tricarinate, the lateral discal carinae somewhat bowed, space between the carinae often transversely ridged; posterior angles of propodeum foveolate. Mesopleura with a single large fovea, the upper margin of which crosses above the pit. Middle tibiae of female spinose above.

Grouping of the species.—The following represents what I believe to be a natural grouping of the known species. I regard group I as most *Rhabdepyris*-like, group IV the most highly evolved in terms of thoracic sculpturing. In each case I have indicated which sexes have been described; at present 4 species are known only from females, 7 only from males.

Group I. Pronotum ecarinate. Scutellar groove simple.

1. *erythrogaster* n. sp. ♀ ♂

Group II. Pronotum ecarinate. Scutellar groove divided.

2. *montivagus* (Kieffer) ♀ ♂

3. *reclusus* (Evans) ♀ ♂

4. *quinquepartitus* (Kieffer) ♀

5. *quadriceps* n. sp. ♀

6. *grandis* n. sp. ♂

Group III. Pronotum with transverse carina. Scutellar groove divided.

7. *polita* Evans ♀ ♂

8. *rufocaudata* Evans ♂

9. *rossi* Evans ♂

10. *brasiliana* Evans ♀

11. *floridana* Evans ♀ ♂

12. *inconspicua* Evans ♀ ♂

13. *olmeca* Evans ♀ ♂ (Male has a weak median pronotal carina)

Group IV. Pronotum with transverse and median carinae. Scutellar groove divided.

14. *inca* Evans ♀

15. *azteca* Evans ♂

16. *depressa* Kieffer ♂

17. *flavicornis* Kieffer ♂

18. *cristata* Evans ♀ ♂

Key to Species

Females

1. Pronotum without a transverse carina 2
- Pronotum with a transverse anterior carina 6
2. Scutellar groove not divided by a septum; claws strongly curved, trifid 1 *erythrogaster* n. sp.
- Scutellar groove divided by a septum; claws moderately curved, dentate 3
3. Clypeus very short, subtruncate; posterior angles of head prominent and with a welt-like elevation 5 *quadriceps* n. sp.
- Clypeus angulate or subangulate medially; head rounded above eyes 4
4. Pronotal disc alutaceous, weakly punctate; scutellar pits only slightly wider than long 3 *reclusus* (Evans)
- Pronotal disc with weak surface sculpturing and rather strong punctures; scutellar pits much wider than long 5
5. Pronotal disc moderately shining, more strongly alutaceous than front and vertex, somewhat parallel-sided; propodeal disc slightly longer than wide 4 *quinquepartitus* (Kieffer)
- Pronotal disc shining, not or barely more alutaceous than front and vertex, shorter and with the sides more divergent behind; propodeal disc as wide as or slightly wider than long 2 *montivagus* (Kieffer)
6. Pronotum without a median carina; head black 7
- Pronotum with a complete median carina set off by linear grooves; or with a partially developed median carina, in this case the head dark green 11
7. Legs wholly testaceous; propodeal disc covered with weak transverse striations 11 *floridana* Evans
- Coxae and femora largely fuscous; sides of propodeal disc shining and with at most very weak sculpturing 8
8. Pronotal carina weakly angled forward medially; median area of propodeum rather weakly sculptured 9
- Pronotal carina evenly arched; median area of propodeum with strong transverse ridges 10
9. Mandibles with 5 teeth, the basal 3 small; front with small punctures which are separated by 1.5–3.0× their own diameters 13 *olmeca* Evans
- Mandibles with only two large apical teeth; front with somewhat stronger and more widely spaced punctures 10 *brasilians* Evans
10. Length of fore wing about 3.8 mm; sides of pronotal disc subcarinate anteriorly 7 *polita* Evans
- Length of fore wing about 3.2 mm; sides of pronotal disc carinate on anterior half 12 *inconspicua* Evans

11. Median carina of pronotum complete; head black; scutellar pits separated by a thin septum 14 *inca* Evans
- Median carina weakly developed on posterior third of pronotum; head with dark, metallic green reflections; scutellar pits separated by a flat-topped ridge 18 *cristata* Evans

Males

1. Pronotum without a transverse carina 2
- Pronotum with a transverse anterior carina 5
2. Scutellar groove not divided by a septum; claws trifid 1 *erythrogaster* n. sp.
- Scutellar groove divided by a septum; claws dentate 3
3. Abdomen rufous except basal segment largely black; length of fore wing 5.6 mm; propodeal disc slightly longer than wide 6 *grandis* n. sp.
- Abdomen black except extreme tip sometimes rufous; fore wing 2.5–4.0 mm; propodeal disc slightly wider than long 4
4. Front polished, very obscurely alutaceous and weakly punctate; notauli somewhat widened behind, but much more widely separated than their own greatest widths 2 *montivagus* (Kieffer)
- Front moderately alutaceous, rather weakly shining; notauli wide behind, separated by about their own greatest widths 3 *reclusus* (Evans)
5. Pronotum without a median carina 6
- Pronotum with a median carina (sometimes rather weak) 10
6. Front and pronotal disc polished, barely if at all alutaceous; larger species, fore wing 2.8–4.0 mm 7
- Front somewhat alutaceous, pronotal disc weakly shining, strongly alutaceous; smaller species, fore wing less than 2.5 mm in length 9
7. Antennae elongate, segment 11 at least twice as long as wide; apical 0.4 of abdomen rufous 8 *rufocaudata* Evans
- Antennae somewhat shorter, segment 11 not more than 1.7× as long as wide; tip of abdomen at most weakly suffused with reddish brown 8
8. Vertex rather narrowly rounded off far above eye tops; median lobe of clypeus roundly subangular 7 *polita* Evans
- Vertex more broadly rounded off, not so strongly angular 9 *rossi* Evans
9. Sides of pronotal disc subparallel, carinate anteriorly; coxae and femora fuscous 12 *inconspicua* Evans
- Sides of pronotal disc diverging behind, not at all carinate; legs bright testaceous except front coxae infuscated 11 *floridana* Evans
10. Temples not carinate 11
- Temples with a strong carina extending from vertex to near mandibular bases 12

11. Scutellar pits separated by a thin septum; pronotal disc subcarinate laterally, with a strong median carina 15 *azteca* Evans
 - Scutellar pits separated by a flat-topped ridge; pronotum rounded laterally, with a weak median carina 18 *cristata* Evans
12. Median carina of pronotum very weak; minimum width of front about $1.2\times$ eye height 13 *olmeca* Evans
 - Median carina of pronotum strong; minimum width of front barely if at all exceeding eye height 13
13. Transverse pronotal carina with the crest somewhat sinuate as seen obliquely from behind, subdentate on the sides 16 *depressa* Kieffer
 - Transverse pronotal carina with the crest rather even, not subdentate 17 *flavicornis* Kieffer

1. *Bakeriella erythrogaster* n. sp.

Holotype.—♀, COSTA RICA: Monte Verde, 13–15 Feb. 1972 (H. M. Powell) [Univ. Calif. Davis].

Description of female type.—Length 5.0 mm; fore wing 3.8 mm. Head and thorax black; abdomen bright rufous except basal segment partially suffused with black; mandibles castaneous; antennae light brown except darker on upper surface of flagellum; coxae and femora fuscous, remainder of legs medium brown; front wings uniformly tinged with brownish. Entire body strongly shining, with scattered short, brownish hairs, somewhat dense on head, pronotum, and femora. Mandibles with 4 teeth in an oblique series, the basal two teeth smaller and more rounded than the others. Median lobe of clypeus obtusely angulate, with a median carina which is straight in profile. Head $0.86\times$ as wide as high; width of front $1.4\times$ eye height; ocelli in a compact triangle far above eye tops, ocello-ocular line $2.2\times$ width of ocellar triangle. Eyes somewhat bulging from sides of head; vertex strongly arched, distance from eye tops to vertex crest (lateral view) subequal to eye height. Front very weakly alutaceous, with strong punctures which are separated by $2\text{--}5\times$ their own widths. Pronotum elongate, disc somewhat prominent anterolaterally; scutellar groove undivided, slightly widened on each side. Propodeal disc very slightly longer than wide, with a strong median carina that extends down the declivity; disc with two additional shorter carinae which are bowed in the form of a lyre, surface between these weakly and irregularly transversely striate, disc elsewhere with only very weak surface sculpturing. Claws strongly curved, trifid.

Allotype.—♂, COSTA RICA: Same data as type but dated 29 June 1972 [Univ. Calif. Davis].

Description of male allotype.—Length 4.0 mm; fore wing 3.5 mm. Color as in female except basal third of abdomen extensively suffused with black, antennae rather uniformly medium brown; body shining and with short, light brown hairs as in female. Mandibles with a strong apical tooth and 4 much

smaller teeth in a nearly straight series based at this tooth; clypeus as in female. Head $0.89\times$ as wide as high; width of front $1.1\times$ eye height; ocelli rather large, ocello-ocular line $1.3\times$ width of ocellar triangle. Antennae elongate, first 4 segments in a ratio of 12:7:8:10, segment 3 about $1.5\times$ as long as wide, segment eleven $3\times$ as long as wide. Eyes strongly bulging, not hairy, vertex broadly rounded off far above eye tops. Front very weakly alutaceous, its punctures smaller and sparser than in female. Features of thorax and propodeum as in female; claws trifid as in that sex.

Paratypes.—12 ♀♀, 2 ♂♂. COSTA RICA: 1 ♀, same data as allotype [Univ. Calif. Davis]; COLUMBIA: 11 ♀♀, 2 ♂♂, Peñas Blancas, Dept. Valle, 24 March 1975 (except 1 ♀ 22 Nov. 1974) (R. Wilkerson, Malaise trap) [Fla. State Coll. Arthropods; U.S. National Museum; Mus. Comp. Zool.].

Variation.—The Costa Rica paratype is closely similar to the type. The females from Colombia consistently have the basal two abdominal segments black, while the males have the greater part of the abdomen black, only the apical 2–3 segments rufous. In some of the females the basal mandibular tooth is partially divided, such that the mandibles are indistinctly 5-toothed. Some of the Colombia females are somewhat larger than those from Costa Rica, fore wing up to 4.5 mm. The head is consistently shorter in Colombia specimens than in those from Costa Rica, the head being from 0.88 to $0.92\times$ as wide as high in the females, from 0.94 to $0.96\times$ as wide as high in the males. However, there seems no basis for regarding these two series as representing different species or, in the absence of material from other localities, different subspecies.

Remarks.—This species will run to *Rhabdepyris* in existing keys because of the undivided scutellar groove. However, it fits poorly in that genus on other features and is quite clearly related to the more generalized species of *Bakeriella*.

2. *Bakeriella montivaga* (Kieffer) new combination

Epyris montivagus Kieffer, 1910; Evans, 1969.

This is possibly the most common and widely distributed member of the genus, ranging from Bolivia to Venezuela and to southern Mexico. Synonymy and a redescription are provided by Evans (1969).

3. *Bakeriella reclusa* (Evans) new combination

Epyris reclusus Evans, 1969.

This species was described from Costa Rica and El Salvador. I have since seen a female from ECUADOR: 11 km SE San Lorenzo. Prov. Esmeraldas, 1975 (S. & J. Peck) [Mus. Comp. Zool.].

4. *Bakeriella quinquepartita* (Kieffer) new combination

Epyris quinquepartitus Kieffer, 1910; Evans, 1969.

A redescription of this species was presented in 1969. Only the type female, from Marcapata, Peru, is known.

5. *Bakeriella quadriceps* n. sp.

Holotype.—♀, COLOMBIA: Finca los Guaduales, near San Jose del Palmar, Choco, 730–800 m, 1 June 1978 (C. Kugler) [Mus. Comp. Zool.].

Description of female type.—Length 5.2 mm; fore wing 3.5 mm. Head and thorax black; basal two abdominal segments black, third segment black except rufous along posterior margin, fourth segment partially suffused with black dorsally, remainder of abdomen bright rufous; mandibles dull ferruginous, black at base; antennae uniformly dull ferruginous; legs black except trochanters, tibiae and tarsi dusky ferruginous; wings subhyaline. Front with numerous short, golden brown setae, temples and thoracic dorsum and pleura more sparsely setose. Mandibles much broadened apically, with 4 large teeth, most basal teeth partially subdivided. Clypeus with a very short, broad truncate median lobe, its median line weakly carinate. Head quadrate, its posterior angles prominent and with a rounded welt; head very slightly higher than wide; width of front $1.4\times$ eye height; front angle of ocellar triangle less than a right angle, ocelli far below vertex crest, ocello-ocular line $2.3\times$ width of ocellar triangle. First 4 antennal segments in a ratio of 25:6:5:6, segment 3 about as wide as long. Eyes weakly hairy; distance from eye tops to vertex crest exceeding eye height; vertex nearly straight in anterior view for a considerable distance. Front alutaceous, moderately shining, with shallow punctures which are separated by $3\text{--}7\times$ their own diameters. Pronotal disc somewhat flat, prominent anterolaterally, surface somewhat more alutaceous and weakly punctate than that of front; scutellar pits slightly wider than long, separated by a thin septum medially. Propodeal disc distinctly widened posteriorly, length slightly exceeding its maximum width; median area with delicate, irregular transverse striae. Claws dentate.

Remarks.—This species is known only from the type.

6. *Bakeriella grandis* n. sp.

Holotype.—♂, COSTA RICA: Monte Verde, 29 June 1972 (H. M. Powell) [Univ. Calif. Davis].

Description of male type.—Length 8.0 mm; fore wing 5.6 mm. Head and thorax black; abdomen bright rufous except first segment largely suffused with black; mandibles rufous above and on apical half; antennae rufous except scape somewhat infuscated and apical third of flagellum fuscous; coxae and femora black, legs otherwise rufotestaceous except trochanters

and tibiae slightly infuscated; wings lightly and uniformly tinged with brown. Body and legs with fairly abundant short, light brown hairs. Mandibles with a large apical tooth and 4 very small teeth basad of this. Median lobe of clypeus angulate, tectiform. Head $0.95\times$ as wide as high; width of front $1.3\times$ eye height; ocelli in a compact triangle far above eye tops, ocello-ocular distance $1.55\times$ width of ocellar triangle. First 4 antennal segments in a ratio of 14:6:7:9, segment three $1.7\times$ as long as wide. Distance from eye tops to vertex crest subequal to eye height; vertex broadly arched. Front polished, very weakly alutaceous, punctures very small, separated by $4-6\times$ their own diameters. Pronotal disc slightly duller and more alutaceous than front, but similarly punctate; pronotum prominent anterolaterally but without carinae. Notauli strong, extending for length of mesoscutum; scutellar groove rather wide, with a thin septum medially. Propodeal disc $0.95\times$ as wide as long, surface rather shining and with very weak surface sculpturing even between the carinae. Mesopleura punctate and with somewhat irregular sculpturing. Claws dentate.

Remarks.—This striking species is known only from the type.

7. *Bakeriella polita* Evans

Bakeriella polita Evans, 1964.

I described this species from males from Bolivia and Peru. I take this opportunity to describe a female from PERU: Monson Valley, Tingo Maria, 26 October 1954 (E. I. Schlinger & E. S. Ross) [Calif. Acad. Sci.].

Description of female.—Length 6.0 mm; fore wing 4.8 mm. Black, except apical third of abdomen suffused with dull rufous; mandibles and antennae ferruginous; coxae and femora fuscous, legs otherwise dull ferruginous; wings subhyaline. Mandibles 5-toothed; clypeus obtusely angulate, with a sharp median carina. Width of head $0.90\times$ length of head; width of front $1.25\times$ height of eye; ocello-ocular line $1.9\times$ width of ocellar triangle. Third antennal segment about as wide as long. Vertex broadly rounded off well above eye tops, top of occipital carina visible in full frontal view. Front polished, very weakly alutaceous, with strong punctures which are separated by $3-5\times$ their own diameters. Pronotal disc similarly punctate but more distinctly alutaceous; front margin with a strong, evenly arched carina, side margins sharp but not carinate. Scutellar pits only slightly wider than long, septum between them round-topped, somewhat wider than in related species. Propodeal disc $1.15\times$ as wide as long, the median area with rather strong transverse rugae. Claws dentate.

8. *Bakeriella rufocaudata* Evans

Bakeriella rufocaudata Evans, 1964.

This species is known from a single male from the mountains of Colombia.

9. *Bakeriella rossi* Evans

Bakeriella rossi Evans, 1964.

I have seen no additional specimens of this species, described from males from two localities in Colombia.

10. *Bakeriella brasiliiana* Evans

Bakeriella brasiliiana Evans, 1964.

This species is evidently widely distributed in the neotropics. A female from the Chagres River, PANAMA, collected 14 July 1918 by Dietz & Zetek [U.S. Nat. Mus.] represents a considerable range extension.

11. *Bakeriella floridana* Evans

Bakeriella floridana Evans, 1964; Evans, 1970.

This small but distinctive species was described from Dade Co., Florida, and later reported from Good Hope, Jamaica. Presumably it will be found to occur elsewhere in the West Indies.

12. *Bakeriella inconspicua* Evans

Bakeriella inconspicua Evans, 1964.

I have seen several additional specimens of this species since the original description. A male from Tamazunchale, San Luis Potosi, MEXICO, collected 6 July 1965 (H. E. Evans) [Mus. Comp. Zool.] represents a small northward extension of the range. I have also seen a series of 1 ♀ and 6 ♂♂ from Merida, VENEZUELA, collected 17 November 1972 (G. E. Bohart) [Utah State Univ.]. Since this is the first female known, a short description follows.

Description of female.—Length 4.4 mm; fore wing 3.2 mm. Black, except apical fifth of abdomen bright rufotestaceous; apical half of mandibles ferruginous, antennae wholly of this color except apical segment dusky; legs fuscous except tarsi and parts of tibiae testaceous; wings hyaline. Mandibles with 3 strong teeth (may be 5-toothed); clypeus obtusely angulate, carinate medially. Width of head $0.87\times$ height of head; width of front $1.35\times$ eye height; ocello-ocular line $1.7\times$ width of ocellar triangle. Third antennal segment about as wide as long. Eyes slightly bulging, quite strongly hairy; vertex rounded off far above eye tops. Front shining, weakly alutaceous, punctures strong, separated by $2-4\times$ their own diameters. Pronotal disc more strongly alutaceous than front and with sparser punctures; disc with a strong, arching carina in front and the sides carinate on the anterior half. Scutellar pits ovoid, separated by a thin septum. Propodeal disc very slightly

longer than wide, its median area with irregular transverse rugae. Claws simple.

13. *Bakeriella olmeca* Evans

Bakeriella olmeca Evans, 1964.

This species was described from Veracruz, MEXICO. I am now able to present several additional records: BELIZE: 2 ♀♀, Middlesex, March 1965 (E. C. Welling) [Canad. Nat. Coll.]; NICARAGUA: 1 ♀, Musawas, Waspuc R., 23 October 1965 (B. Malkin) [Univ. Calif. Berkeley]; COSTA RICA: Osa Peninsula, Puntarenas (R. W. Matthews) [Mus. Comp. Zool.].

14. *Bakeriella inca* Evans

Bakeriella inca Evans, 1964.

This species was described from Peru, and can now be recorded from adjacent countries, as follows: ECUADOR: 1 ♀, Chimbaratzo, Zamora, 3, March 1965 (L. Peña) [Amer. Mus. Nat. Hist.]; BOLIVIA: 18 ♀♀, Rio Itenez, Beni, 1964 (Bouseman & Lussenhop) [Amer. Mus. Nat. Hist.]; 1 ♀, 20 km W Laranjeiras, August 1964 (Bouseman & Lussenhop) [Amer. Mus. Nat. Hist.].

15. *Bakeriella azteca* Evans

Bakeriella azteca Evans, 1964.

I have seen no additional specimens of this species described from a male from Morelos, MEXICO.

16. *Bakeriella depressa* Kieffer

Bakeriella depressa Kieffer, 1910; Evans, 1964.

I am unfamiliar with the female of this species, which was described from Peru and later reported from Panama and Costa Rica. I have also seen a male from ECUADOR: Puyo, 18 April 1958 (R. Hodges) [Mich. State Univ.].

17. *Bakeriella flavicornis* Kieffer

Bakeriella flavicornis Kieffer, 1910; Evans, 1964.

This species is known only from the type from Pará, Brazil. It is doubtfully distinct from the preceding species.

18. *Bakeriella cristata* Evans

Bakeriella cristata Evans, 1964; Evans, 1973.

I described this species from males from Brazil and Bolivia, and subsequently reported males from two localities in Argentina (in Salta and Misiones); I also described a female from Santa Catarina, Brazil. Evidently this distinctive species is widely distributed in South America.

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